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Supplementary appendix

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Supplementary Materials for

**Land use-induced spillover: a call to action to safeguard
environmental, animal, and human health**

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This PDF file includes:

Tables S1

Table S1.

Land use-induced spillover and landscape immunity terms framework

Term	Definition	Source
Biosecurity	A strategic and integrated approach to analyzing and managing relevant risks to human, animal and plant life and health and associated risks for the environment	International Food Safety Authorities Network, Biosecurity: An integrated approach to manage risk to human, animal and plant life and health. <i>INFOSAN Information Note</i> (2010).
Conservation physiology	An integrative scientific discipline applying physiological concepts, tools, and knowledge to characterizing biological diversity and its ecological implications; understanding and predicting how organisms, populations, and ecosystems respond to environmental change and stressors; and solving conservation problems across the broad range of taxa (i.e. including microbes, plants, and animals).	S. J. Cooke, L. Sack, C. E. Franklin, A. P. Farrell, J. Beardall, M. Wikelski, S. L. Chown, What is conservation physiology? Perspectives on an increasingly integrated and essential science. <i>Conserv. Physiol.</i> 1 (2013), doi: 10.1093/conphys/cot001 .
Disease ecology	Study of the population-level patterns and dynamics of infectious diseases—how transmission, prevalence, and consequences of disease change in space and time; how interactions between pathogens, hosts and environment drive these changes; why pathogens cross species barriers; and how control strategies can reduce disease transmission and prevalence.	K. Wilson, A. Fenton, D. Tompkins, <i>Wildlife Disease Ecology: Linking Theory to Data and Application</i> (Cambridge University Press, 2019). P. J. Hudson, A. P. Rizzoli, B. T. Grenfell, J. A. P. Heesterbeek, A. P. Dobson, <i>Ecology of Wildlife Diseases</i> (2002).
Ecoimmunology	Field of study that aims to explain variation in individual immune phenotypes and to understand their fitness consequences.	A. B. Pedersen, S. A. Babayan, Wild immunology. <i>Mol. Ecol.</i> 20 , 872–880 (2011).

		G. E. Demas, D. A. Zysling, B. R. Beechler, M. P. Muehlenbein, S. S. French, Beyond phytohaemagglutinin: assessing vertebrate immune function across ecological contexts. <i>J. Anim. Ecol.</i> 80 , 710–730 (2011).
Ecological resilience	Ecological capacity for renewal in a dynamic environment.	L. H. Gunderson, Ecological Resilience—In Theory and Application. <i>Annu. Rev. Ecol. Syst.</i> 31 , 425–439 (2000).
Environmental stress	Adverse abiotic or biotic conditions that increase physiological stress of an organism over long time spans and can cause immunosuppression.	K. Acevedo-Whitehouse, A. L. Duffus, Effects of environmental change on wildlife health. <i>Phil. Trans. R. Soc. Lond. B.: Biol. Sci.</i> 364 , 3429–3438 (2009).
Landscape epidemiology	Describes how the temporal dynamics of host, vector, and pathogen populations interact spatially within a permissive environment to enable transmission. It also aims at understanding the vegetation and geologic conditions that are necessary for the maintenance and transmission of a particular pathogen.	N. N. Emmanuel, N. Loha, M. O. Okolo, O. K. Ikenna, Landscape epidemiology: An emerging perspective in the mapping and modelling of disease and disease risk factors. <i>Asian Pac. J. Trop. Dis.</i> 1 , 247–250 (2011). R. S. Ostfeld, G. E. Glass, F. Keesing, Spatial epidemiology: an emerging (or re-emerging) discipline. <i>Trends Ecol. Evol.</i> 20 , 328–336 (2005).
Landscape immunology	Interdisciplinary, applied field that identifies and manages the landscape-level stressors that influence immune function of wildlife inhabiting those landscapes and	Herein

	the dynamics of proximity of wildlife and people	
Landscape immunity	A condition of ecosystems that strengthens and maintains the immune competence of inhabiting species in order to prevent zoonotic pathogen acquisition, shedding, and spread to humans.	Herein
Macroecology	The study of large-scale patterns in animal abundance, diversity, and distributions	K.J. Gaston, T.M. Blackburn, <i>Patterns and Processes in Macroecology</i> (2000)
Macroimmunology	Expands ecoimmunology into macroecological approaches that aim to identify broad spatial patterns in defense	D. J. Becker, G. F. Albery, M. K. Kessler, T. J. Lunn, C. A. Falvo, G. Á. Czirják, L. B. Martin, R. K. Plowright, Macroimmunology: The drivers and consequences of spatial patterns in wildlife immune defence. <i>J. Anim. Ecol.</i> 89 , 972–995 (2020).
One Health	A collaborative, multisectoral, and transdisciplinary approach (working at the local, regional, national, and global levels) with the goal of achieving optimal health outcomes recognizing the interconnection between people, animals, plants, and their shared environment.	E. P. J. Gibbs, The evolution of One Health: a decade of progress and challenges for the future. <i>Vet. Rec.</i> 174 , 85–91 (2014).